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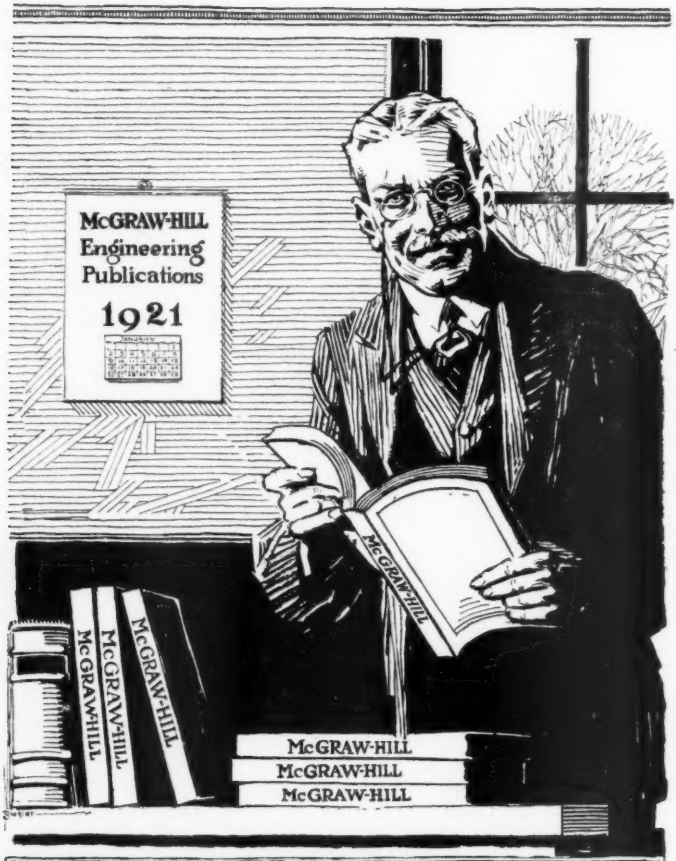

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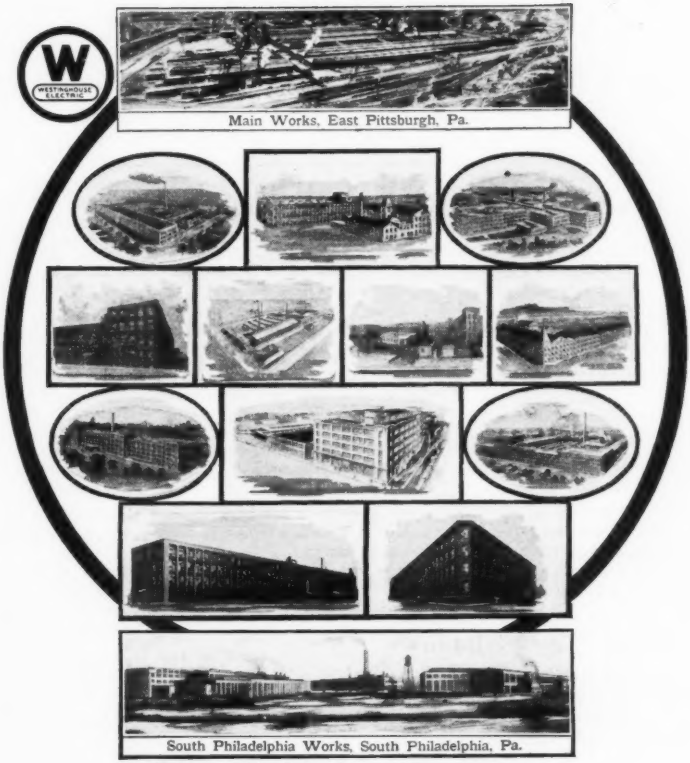

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EDITOR'S NOTE.

It was agreed by the Publication Committee last year that the year book, which is the March number of ENGINEERING EDUCATION, should be published every other year and that on alternate years the corrections only to the preceding year book should be published in the March number. Due to the large number of corrections, this number of ENGINEERING EDUCATION contains only such corrections and college notes.

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WENDT, W. B., Professor of Civil Engineering, State School of Mines, Rapid City, S. D. 1908

WHIPPLE, G. C., Gordon McKay Professor of Sanitary Engineering, Harvard University, Cambridge, Mass. 1896

WHITE, A. H., Head, Department of Chemical Engineering, University of Michigan, Ann Arbor, Mich. 1920

WHITE, W. R., 406 West Chelton Avenue, Philadelphia, Pa. 1919

WILLIAMS, J. P. J., Associate Editor, *Engineering News-Record*, New York City, 163 North 14th Street, Flushing, L. I. 1919

WILLIAMS, NEIL H., Professor of Physics, University of Michigan, Ann Arbor, Mich. 1920

WINSLOW, A. M., Associate Professor of Mechanical Engineering, University of Washington, Seattle, Wash. 1918

WOLF, HARRY J., 42 Broadway, New York, N. Y. 1914

WISLER, C. O., Assistant Professor of Civil Engineering, University of Michigan, Ann Arbor, Mich. 1920

WOLFARD, N. ELLSWORTH, Assistant Professor of Civil Engineering, University of Oklahoma, Norman, Okla. 1921

WRIGHT, D. M., Secretary-Treasurer, The Henry & Wright Mfg. Co., Box 344, Hartford, Conn. 1914

WRIGHT, E. A., Assistant Professor of Civil Engineering, Tufts College, Tufts College, Mass. 1920

WRIGHT, EDWIN H., Assistant Professor of Civil and Structural Engineering, Tufts College, Tufts College, Mass. 1920

SECTIONS OF THE SOCIETY.

GEORGIA TECH SECTION, R. S. King, *President;* T. G. Seldell, *Vice-President;* R. R. Kirk, Atlanta, Ga., *Secretary-Treasurer.* 1920

KANSAS-NEBRASKA SECTION, G. R. Chatburn, Univ. of Nebraska, *Chairman;* R. A. Seaton, Kansas State Agricultural College, *Secretary* 1920

NEW ENGLAND SECTION, Gardner C. Anthony, Tufts College, *Chairman;* H. S. Boardman, University of Maine, *Secretary* 1921

PITTSBURGH SECTION, P. M. Dysart, Schenley High School, *Chairman;* C. B. Stanton, Carnegie Institute of Technology, *Secretary* 1919

DECEASED MEMBERS.

ALLEN, J. R.
BATES, JOHN T.
POND, G. G.
RANDOLPH, O. A.
WOLFEL, PAUL L.

RESIGNATIONS.

Individual.

Adams, Conrad A.
Adler, A. A.
Allen, Frederick G.
Anderson, R. J.
Andrews, W. H.
Aude, H. T. R.
Barraclough, S. H. E.
Benjamin, C. H.
Berger, F. A.
Berresford, A. W.
Betts, Philander.
Black, R. M.
Brown, H. W.
Brydone-Jack, E. E.
Burnside, C. H.
Chaney, Geo. A.
Chase, Leon W.
Clifton, H. T.
Curtis, L. F.
Dadourian, H. M.
Dates, H. B.
DeTurk, J. A.
Drowne, H. B.
Eaton, J. S.
Edmondson, T. W.
Ehlers, H. E.
Fenton, Henry H.
Fry, Lawford H.
Halsey, F. A.
Hamlin, Hannibal L.
Hausman, Erich
Hendry, W. S.
Hodson, L. C.
Holbrook, E. A.
Hutchins, R. E.
James, R. L.
Kay, Edgar B.
Krotzer, Fred. W.
Lapham, J. S.
Lewis, F. J.
Lieb, J. W.
McComb, Dana Q.
McNaugher, D. W.
Mathews, R. M.
Mathewson, Jas. S.
Matthews, Robertson.
Mease, J. A.
Merrill, J. L.
Miller, Hugh.
Mitcham, G. N.
Moseley, A. W.
Newcomb, Rexford.
Olmsted, Chas T.
O'Neill, J. F.
Ossa, Gaston.
Owens, R. H.
Pinto, Anthony.
Poole, Cecil P.
Porter, H. E.
Putnam, Wm. J.
Rasmusen, J. E.
Richtmyer, F. K.
Riddervold, A. S.
Robert, J. H.
Roberts, W. J.
Selby, L. B.
Slocum, Stephen E.
Smith, L. S.
Streeter, R. L.
Weaver, Warren.
Webber, R. I.
Wenrich, C. N.
Wills, C. F.
Winter, J. W.

Institutional.

University of South Dakota.
U. S. Naval Academy.

COLLEGE NOTES.

University of Akron.—The City of Akron has passed a bond issue of $150,000 for its Municipal University; $25,000 will be used to build one unit of a stadium for the Athletic Association and $70,000 will be for the building of an addition of two more bays to the Engineering Laboratory and a three story wing 40 feet square which will provide drawing room and class room space. This will make the Engineering Laboratory 50 feet by 102 feet with a 40-foot square wing. $30,000 will be available for additional equipment for the Engineering Department.

The Carnegie Institute of Technology has an enrollment this year of 2,284 day students and 1,597 night students, a total of 3,881. These students are distributed among the five divisions of the Institute as follows: Division of the Arts, 335 day, 185 night; Division of Industries 550 day; 915 night; Margaret Morrison Division 320 day, 68 night; Division of Applied Psychology 79 day, 9 night; Division of Science and Engineering 1,000 day, 420 night.

The Executive Committee of the Faculty this year is composed of F. F. McIntosh, chairman; J. S. Keir, vice-chairman; Charles Watkins, secretary-treasurer.

The Hon. George W. Wickersham, Attorney General of the United States during President Taft's administration, will deliver the Commencement oration. Mr. Wickersham, who is a native of Pittsburgh, is a member of the law firm of Cadwalader, Wickersham, and Taft, New York. He was for a number of years trustee and vice-president of the New York Association for the Improvement of the Poor and the New York Institution for the Blind. During the war, he was member and vice-chairman of the District Board of New York City. At present he is a trustee of the Carnegie Institution of Washington. Dr. Albert Parker Fitch will deliver the baccalaureate sermon.

A coal mining laboratory has been installed at the Institute this year, that is without a counterpart in the United States. The laboratory is situated under the building of the Division of Science and Engineering. The equipment includes a mine locomotive, washing apparatus and other machinery, and a full size mine—a model mine only in that it yields no coal. The mine will be extended beneath the campus during the practice work of the students, and if feasible, it will be used to carry some of the steam pipes of the Institute.

S. E. Dibble, head of the department of heating, ventilating, and sanitation of the Division of industries, is one of the associate editors of a "Handbook of Building Construction," by Hool and Johnson, published by McGraw-Hill company. Mr. Dibble's contribution is on plumbing and drainage.

Director William E. Mott, of the Division of Science and Engineering, spoke before a meeting of the Pittsburgh Section of the Society for the Promotion of Engineering Education at the University Club on January 12. Mr. Mott's subject was "Motivating the Work of Engineering Students."

Professor B. C. Dennison, of the electrical engineering department, attended the Akron-Cleveland meeting of the American Institute of Electrical Engineers, on January 14. The subject discussed at the meeting was "The Application of Electricity to the Rubber Industry."

Lehigh University.—Dr. N. M. Emery, vice-president of Lehigh University, is in executive charge pending action of the board of trustees in electing a successor to Dr. Henry S. Drinker, whose resignation as president took effect December 31, 1920. During the fifteen years of President Drinker's administration, the enrollment increased from 630 to 1,136 students, the teaching staff from 57 to 89, and the endowment from $1,083,732 to $3,057,005. Ten buildings and extensive park developments were added to the University equipment.

The student societies in the various engineering departments of Lehigh University are having an active season. Among

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the speakers who have given addresses this winter and spring are the following: Civil Engineering Society, Dr. R. S. McElwee, Director of the Bureau of Foreign and Domestic Commerce, and Thaddeus Merriman (L. U., '97), Deputy Chief Engineer of the Board of Water Supply, New York City; Mechanical Engineering Society, Calvin W. Rice, Secretary of the American Society of Mechanical Engineers, Frank Gilbreth of Montclair, N. J., H. A. Howarth, of Kingsbury Thrust Bearing Co., Philadelphia, and Harold Goodwin of the U. S. Geological Survey; Electrical Engineering Society, H. P. Liversiege of the Philadelphia Electric Co., W. S. Burlier of the Bethlehem Steel Co., and S. Q. Hayes of the Westinghouse Electric Manufacturing Co.; Chemical Engineering Society, Harlan S. Miner (L. U., '88) Chief Chemist of the Welsbach Light Co., C. A. Buck, (L. U., '87) Vice-President of the Bethlehem Steel Co., L. G. Matthews of the Du Pont de Nemours Co., New York City and Henry Green of the New Jersey Zinc Co.; Mining Engineering Society, Dr. George H. Ashley, State Geologist of Pennsylvania.

Oregon Agricultural College.—The new Engineering Laboratory Building is now completed and occupied, although considerable equipment remains to be installed.

The building is 220 feet by 67 feet, of brick and concrete construction, three stories high. The main laboratory is 48 feet wide and extends the whole length of the building. There is a basement floor, a main floor and a gallery or mezzanine floor. A five-ton electric traveling crane serves the entire laboratory.

The west end of the building contains a 100 h. p. water tube boiler for heating and experimental work; also the steam and gas engine equipment.

The middle section of the main laboratory is devoted to hydraulics and the eastern section contains the materials laboratories, including highways, paving, fuels, lubricants, metallography, etc.

Besides the main laboratory, the building contains smaller

special laboratory rooms, mechanicians' shop, offices, and recitation rooms.

Department of Mechanical Engineering.—Wallace H. Martin was appointed professor of heat engineering in this department at the beginning of the present school year.

Professor Martin graduated from the University of Minnesota in 1910 with the degree of M.E. and entered the employ of the Oliver Iron Mining Co., where he remained until October, 1911, at which time he became instructor in mechanical Engineering at the University of Minnesota.

In 1917 Professor Martin left Minnesota to accept an assistant professorship in mechanical engineering at the Pennsylvania State College and two years later he was promoted to the position of associate professor of mechanical engineering, from which he resigned to accept his present position.

University of Pittsburgh.—Dr. John Gabbert Bowman, formerly president of the American College of Surgeons, has accepted the chancellorship of the University of Pittsburgh and assumed his new duties January 1. Dr. Bowman is well known to American educators for his services as president of the State University of Iowa, and, later as secretary of the Carnegie Foundation for the Advancement of Teaching. He comes to the University of Pittsburgh to succeed Dr. Samuel Black McCormick, who has been made chancellor emeritus of the institution.

Under the administration of Chancellor Bowman an active program of internal development and external extension is planned for the University, the first steps of which are the completion of the new Alumni Hall and the Automotive Highway Building, both occupying prominent sites on the University Campus. Alumni Hall is reputed to be one of the largest and finest college recitation buildings in the country, a three-story structure, 300 feet long by 60 wide, and containing complete facilities for the accommodation of 2,226 students each class hour. The building has great exterior

beauty to conform with the general university buildings, and is reputed to be a model for economy of interior space. More than 3,500 alumni of the university subscribed toward the $530,000 fund to cover the cost of the completed structure equipped for use by the students. Forty class rooms, four large lecture rooms and sixteen faculty rooms, in addition to the usual storage and boiler rooms, are provided for in the new structure.

The Automotive Highway Building has been located on the crest of the University campus, and is of the factory type of design, well adapted to laboratory experiments for the improvement of automobile mechanism. The structure is 180 feet long by 50 feet wide, and is equipped with complete facilities for elaborate experimentation looking toward the improvement and economy in automobile mechanism. The new structure was recently inspected by the Committee on Highway Transport Education, appointed by United States Commissioner of Education P. P. Claxton and containing in its membership many of the most prominent automobile engineers in the country. The first general meeting of this Committee was held in Pittsburgh last Fall, and following the inspection of the new facilities offered by the Automotive Highway Building, an elaborate program of automotive engineering education was outlined for adoption by American schools. It is planned to carry the educational program of the Committee into the public schools as well, particular emphasis being placed upon the teaching to school children of traffic regulations and safety laws.

With the completion of Alumni Hall and the Automotive Highway Building, the University of Pittsburgh trustees have also announced the acquisition of the Elizabeth Steel Magee Memorial Hospital, which will be equipped as a general hospital and used largely as a teaching clinic. The Magee Hospital is one of the best equipped institutions of its kind in America, and with the many improvements which have been made during the past six weeks will ideally serve as an adjunct

to the University's Medical School. The teaching staff of the Medical School will serve as the general staff of the hospital.

University of Virginia.—The *University of Virginia Engineering Journal*, a new publication to be issued by the students of applied science, will make its initial appearance in February. The purposes of the *Journal* are particularly to make possible a closer liaison between former students and their alma mater, to serve in bringing more clearly to the students attention activities in the field of engineering, and eventually to offer a convenient medium for the publication of material by the student body.

An extended study of the needs of the university with respect to adequate heating facilities is now being made with the object of installing at an early date a complete, modern central heating plant for all the buildings on university property.

A special committee appointed by the State Legislature's direction is conducting a thorough investigation of the problem of medical education in the state of Virginia. At the present time there are two state-supported schools of medicine, the medical school of the university at Charlottesville and the medical College of Virginia at Richmond. The committee is unanimous in its recommendation that but one such institution should be maintained, the question of location of the one, however, is occasioning considerable discussion and difference of opinion. The committee expects to report its complete recommendations at the next meeting of the Legislature in January, 1922, at which session the final disposition of the question will probably be made.

BOOK REVIEW.

Contracts in Engineering. JAMES IRWIN TUCKER, B.S., LL.B., Director of the School of Civil Engineering, University of Oklahoma (on leave); Chief Engineer, Continental Asphalt and Petroleum Co.: Author, "The American Road." Second Edition. 331 pages. 6×9. McGraw-Hill Book Company.

An elementary text-book for students in engineering, engineers, contractors and business men. As stated in the preface, "the aim has been to enable the engineer to coöperate efficiently with lawyers, and to appreciate more perfectly the need for their assistance."

The book is well arranged for either class-room or reference use. It presents the subjects of the law of contracts in excellent form and injects many apt illustrations to clarify the meaning. In fact as a text only on the law of contracts for engineers, it would fill a need not now met by the average business law text. The addition of such chapters as "Contracting as a Business" and more especially that on "Engineering Contract-Writing" make the book doubly valuable.

In the chapter on "Contracting as a Business," such topics as the *types* of Engineering Contracts,—Day Labor vs. Contract Work, Lump Sum vs. Cost-Plus, etc., are ably treated. An engineer or an engineering student cannot fail to be greatly benefitted by a careful study of these matters.

The chapter on "Engineering Contract-Writing" sets forth clearly and concisely many points not ordinarily available in printed form to the average student. It should accomplish much toward giving the student a proper perspective of his future duties, rights and obligations to others.

This volume should find a place in the curriculum of many institutions where the subject is not already covered.

J. W. H.

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS.

May 23d to 26th has been set as the date of the spring meeting of The American Society of Mechanical Engineers. It will be held in Chicago at the Congress Hotel.

Sessions are planned by the Professional Sections on Aëronautics, Fuels, Management, Material Handling, Machine Shop, Power, Forest Products and Railroads.

HIGHWAY AND HIGHWAY TRANSPORT EDUCATION.

Prof. C. J. Tilden, Yale University, has assumed the directorship of the work of the committee and is now actively engaged in the task of outlining its program. Thursday, February 3, he will address members of the Harvard Engineering society on the work of the committee, in New York City; the week following he will speak at the annual convention of the American Road Builders Association at Chicago, and February 23 he is scheduled to appear on the program of the second regional conference held under the direction of the committee at Michigan University.

Dean A. N. Johnson, University of Maryland, working in coöperation with the U. S. Geological service, is outlining the routes of noted national highways on base maps. The maps will be accompanied by a brief description of the historical background of the highway, the reasons for its location and a study of its uses. The work will be done in simple language for distribution to grade schools.

The second conference of the committee at the University of Michigan, February 23, will be a notable advance in the discussion of educational aspects of highway and highway

transport. Three sessions will be held, at 10 a.m., 2 p.m., and 8.30 p.m. respectively in addition to which there will be a dinner at 6.30. All of the speakers will be men of national repute including in addition to many members of the committee and others, the Hon. Wm. C. Redfields, former Secy. of Commerce and Dr. Marion L. Burton, president of the University. Dr. Claxton will preside during the day, Dr. Cooley, president of the Society for the Promotion of Engineering Education at the dinner, and Dr. Burton at night.

On the day preceding the conference the national committee will hold a meeting at the Detroit Club, the members leaving that evening for Ann Arbor.

The bulletin of the proceedings of the first conference held in Washington, May 14–15, as prepared by Dean F. L. Bishop and Dr. W. C. John has been issued by the Bureau of Education. An edition of 12,500 has been run and will be given circulation throughout the educational world and to those interested in highway transport.

What Is Air Pressure?

THE air is composed of molecules. They constantly bombard you from all sides. A thousand taps by a thousand knuckles will close a barn door. The taps as a whole constitute a push. So the constant bombardment of the air molecules constitutes a push. At sea-level the air molecules push against every square inch of you with a total pressure of nearly fifteen pounds.

Pressure, then, is merely a matter of bombarding molecules.

When you boil water you make its molecules fly off. The water molecules collide with the air molecules. It takes a higher temperature to boil water at sea-level than on Pike's Peak. Why? Because there are more bombarding molecules at sea-level—more pressure.

Take away all the air pressure and you have a perfect vacuum. A perfect vacuum has never been created. In the best vacuum obtainable there are still over two billion molecules of air per cubic centimeter, or about as many as there are people on the whole earth.

Heat a substance in a vacuum and you may discover properties not revealed under ordinary pressure. A new field for scientific exploration is opened.

Into this field the Research Laboratories of the General Electric Company have penetrated. Thus one of the chemists in the Research Laboratories studied the disintegration of heated metals in highly exhausted bulbs. What happened to the glowing filament of a lamp, for example? The glass blackened. But why? He discovered that the metal distilled in the vacuum depositing on the glass.

This was research in pure science—research in what may be called the chemistry and physics of high vacua. It was undertaken to answer a question. It ended in the discovery of a method of filling lamp bulbs with an inert gas under pressure so that the filament would not evaporate so readily. Thus the efficient gas-filled lamp of today grew out of a purely scientific inquiry.

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Conversely, if you are working for such a big-souled company, the very fact will argue that you yourself are a man worth while. For in business as in social life a man is known by the company he picks.

* * *

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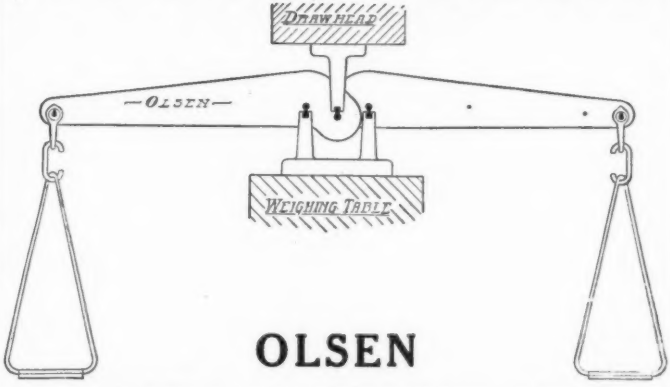

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AT

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